



Short communication

דוח מקוצר

## Middle Ages sailing on the Dead Sea<sup>1</sup>

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### ABSTRACT

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The ongoing shrinking of the Dead Sea level has revealed new beaches, where the Dead Sea Coastal Survey Team is now working. Recently we found five composite anchors dated to the Medieval period, considered new types in the study of anchors. These new findings enrich our knowledge about sailing on the Dead Sea during the Middle Ages.

### 1. New coasts of the Dead Sea

The decreasing level of the Dead Sea created and is still creating huge sinkholes that endanger roads, agricultural and tourist infrastructures on the Dead Sea shores on both sides of the lake, in Israel and Jordan. The only benefit of this situation is the opportunity to survey the newly exposed areas and to find evidence for sailing on the Dead Sea, mostly anchors made of organic substances such as wood and rope.

### 2. Medieval composite anchors

During 2006, Asaf Oron and the author, of the Dead Sea Coastal Survey Team, found five medieval anchors located in three different places along the western coast of the lake. All five anchors are new type of a composite anchor made of a weight-stone, wooden parts and rope. All components were made of local materials that are common in the Dead Sea region. Two anchors were found complete, with parts of their ropes. Of the rest, only the weight-stone survived (Fig. 1).

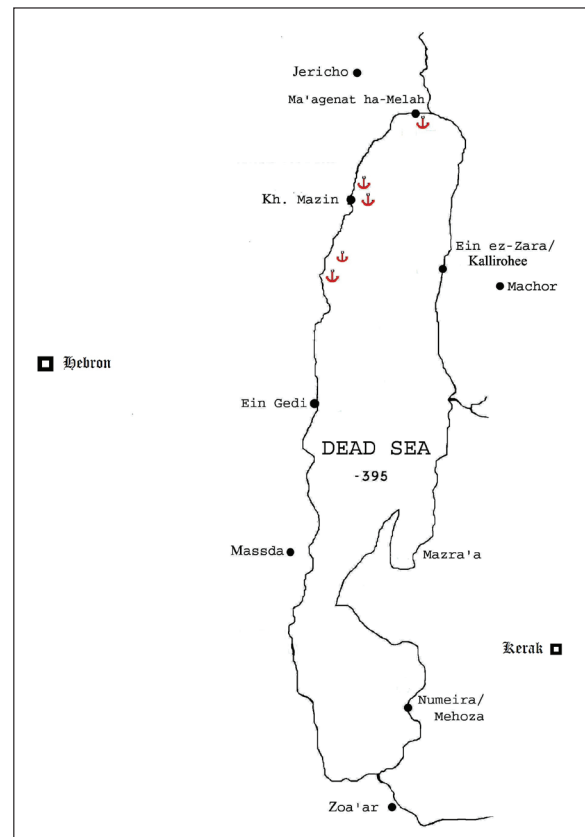


Figure 1: Middle Ages anchors at the Dead Sea  
Illustration: Medieval anchor

<sup>1</sup> Based on a lecture given in: TROPIS X: The 10th International Symposium on Ship Construction in Antiquity on Hydra, Greece, 2008.

The weight-stones are made of clastic rock of the Samra Formation, contrary to the other anchors previously found on the Dead Sea coasts. The Iron Age anchor and the Hellenistic Period anchors have weight-stones carved of dolomite and hard limestone.

The medieval anchor builders reused building blocks from a nearby ruin of the Hasmonean-Herodian Period and perforated a 10–13 cm hole in the middle of each block (the average block is 30X30X50 cm and weighs about 80 kg).

One anchor's weight-stone still had a layer of building mortar on it, typical to the Hasmonean-Herodian Period. Unfortunately, this anchor later sunk in a sinkhole that had widened.

A complete anchor was found on the beach of Kh. Mazin, close to a small sinkhole. The wooden anchor shank has three holes chiselled through it, and passes freely through the circular hole in the middle of the block.

The top hole in the anchor head is where the anchor rope was tied. The rope they used was made of three strands. Below it was the second hole through which the upper arm passed, above the weight-stone. The lower arm passed through the third hole, under the weight-stone, and secured it so it could not slip off the anchor shank. The two anchor arms were not parallel, but perpendicular to each other (Fig. 2).



Figure 2: Kh. Mazin anchor

The wooden parts, three in each anchor, were composed of straight branches about 0.9 m long, made of Christ thorn and tamarisk. The ropes were made of date palm fibers. All the botanical identifications were made by Prof. Nili Lifshitz of Tel Aviv University.

The dating analysis of the organic materials, wood and ropes, revealed their age to be that of the Middle Ages, (10th to 12th century CE), from the end of the Fatimid Period to the Crusaders Times. The <sup>14</sup>C dating analysis was done by Dr.

Georges Bonani at the ETH Radiocarbon Laboratory in Zurich (Oron et al., 2008).

### 3. Analogy: An Indonesian shipwreck anchor

The only other anchor similar to those of the Dead Sea was found in Indonesian waters in 1999, in the Belitung Shipwreck dated to the 9th century CE. The ship was loaded with Chinese ceramics and traded between the Western Indian Ocean and China. Among the finds was a composite grapnel-type anchor with a wooden shank and iron arms: "The configuration is that of a grapnel. However, the arms are not angled upwards, but protrude straight outwards. ... Perhaps two of the arms were intended to act as a stock. They are separated vertically by a heavy iron bell-shaped disc, which has a hole through the center" (Flecker, 2000, 209). Such a composite anchor was used in an Arab ship as depicted in Harari's painting of the 13th century (Hourani 1995: 92; Fig. 25).

According to this description it seems that the anchor shaft could swing inside the heavy metal weight, which looks like the anchors we found. If so, it might be that this technology was indirectly brought to the Dead Sea by the sea routes of the Indian Ocean.

### 4. Historical sources

Revealing the medieval anchors adds a new layer of information to the study of sailing on the Dead Sea, in a period for which we have only few historical notes.

The Muslim geographer Al-Idrisi (12th Century) wrote: "On the lake there are small ships which make the voyage of these parts, and carry over corn and various sorts of dates from *Zughar* and *Ad Darh* to *Ariha* (Jericho), and the other provinces of the *Ghaur*" (Le Strange 1965, 66: Idrisi 3).

Two crusader's documents signed by the lords of the Trans-Jordan principedom, then called *Oultre Jourdain*, exempted the Hospitalier's Order from any taxes laid upon merchandise transported by boats on the Dead Sea (de Luynes, 1874: 356).

The first document was signed in 1152 and starts: "I, Maurice Lord of Montreal and Kerak, permit the Hospitaliers knights (*Chavalliers hospitaliers de Saint Jean de Jerusalem*) to pass everything that can be loaded on a boat on the Dead Sea without any payment and tax .. "

The second document, written 25 years later in 1177, is a confirmation of the first document and was signed by *Reynald de Chatillon* (1127–1187), Lord of Hebron, Montreal and Kerak. It was given to the Hospitaliers order of Jerusalem and exempted them from all tax. At that time, the principedom included also Hebron, on the west side of the Dead Sea.

*Renauld de Chatillon* was also involved with sailing on the Red Sea. At *Montreal* / Shawbak he built five ships and sent them dismantled to *Ayla* / Aqaba of today at the northern end of the Gulf of Eilat. There he overcame Coral Island / *Isle de Graye*, and sent his ships to raid on the international trade route to India via the Red Sea and the Muslim's pilgrim naval route. They also landed and tried to proceed toward Medina – the second holy city of Islam in 1183.

The technology of transporting dismantled ships via land was known before, as Saladin himself did in 1170 to conquer *Ayla* from the Crusaders (Ehrenkreutz 1955, 104; 109). *Renauld de Chatillon*, as a prince of Trans-Jordan principedom, controlled the Haj land route from Damascus to Mecca and sometimes raided the Haj caravans in spite of the agreement between the Crusader king of Jerusalem and the Muslims.

These acts led to the Battle of Hattin, on the 4th of July 1187, where the Crusaders were defeated, and some became prisoners. Among them was *Renauld de Chatillon* who received personal treatment from Saladin, who had him beheaded.

### 5. Medieval anchors and the Dead Sea level

The locations where the medieval anchors were found add one more clue to reconstructing the Dead Sea water level in this certain period. The five anchors were found at different levels. Near Kh. Mazin two anchors were found, one was complete and of the second, only the weight-stone survived. Both were on the water level at that time which was -420 m. The third anchor was found complete near Samar springs, far from the shore. However, the fourth anchor weight-stone was found near Nachal Hatzatzon around the water level of the Dead Sea during the 1960s when its level was around -360 m.

According to the location of the fourth anchor it seems that the Dead Sea level was once high. This fact is confirmed by geologists who charted the Dead Sea level fluctuations according to the sediments and geomorphic indications of the lake shoreline. They found that the Dead Sea level was high during the Crusaders and Medieval Age (Bookman et al., 2004).

There is a direct connection between the lake level and the amount of precipitation. During periods of high water level, the passage along the coast north of Ein Gedi towards Jericho on the west side of the lake was blocked. There was never a passage on the east side of the lake where the cliffs descend vertically down to the water.

Encircling the Dead Sea by land meant crossing the large canyons that cut both sides of the Dead Sea, so land transportation was never easier, more convenient or faster than marine transportation (Hadas, 2011, Oron et al., 2014).

Periods of high precipitation raised the lake's water level and increased the country's economic prosperity, including that of the Dead Sea region, by producing more crops and making sea transportation necessary. Such a correlation between the Dead Sea high water levels and prosperous periods occurred during the Medieval Age, the Byzantine period and the Late Hellenistic-Early Roman period (Bookman et al., 2005, 66; Oron et al., 2014).

### 6. Conclusions

The anchors that were found on the exposed coasts of the Dead Sea are evidence of local maritime activity on the lake. The new type of anchor dated to the 10th–12th century CE is an important new addition of information to the study of the period and the region.

Unfortunately, it seems that the Dead Sea will continue to shrink in the near future and new shores of the lake will be exposed every year. For this reason, the coasts survey must continue. Furthermore, it is important to survey the eastern side of the lake, and we would gladly cooperate with our neighbors, the Jordanian colleagues.

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